



## High effective harvesting of microalgae *Chlorella prothotecoides* via flocculation with cationic starch

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# High effective harvesting of microalgae *Chlorella prothotecooides* via flocculation with cationic starch

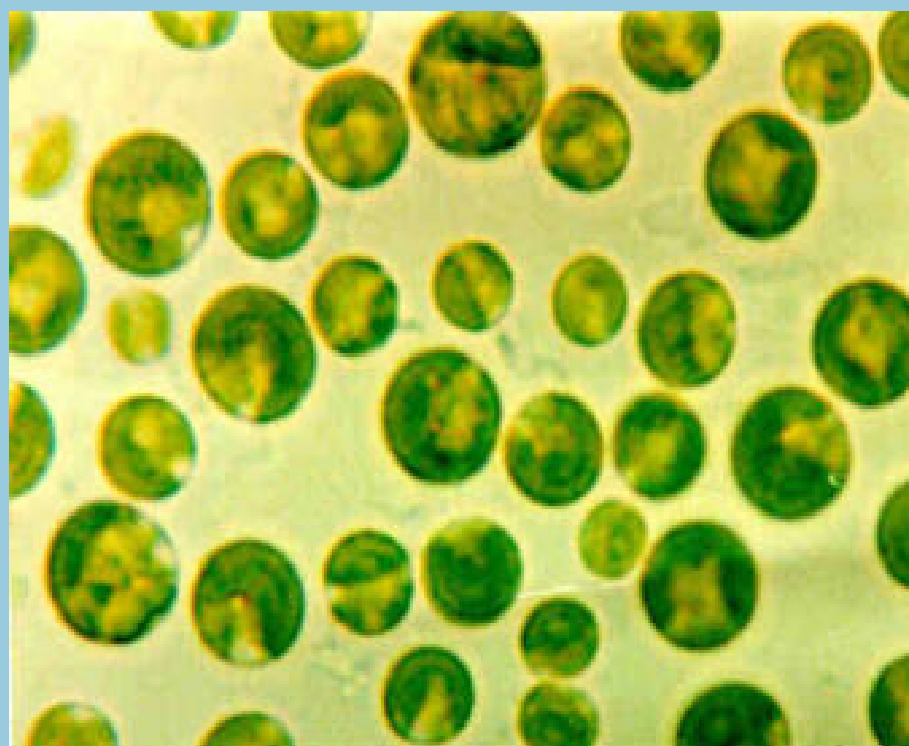
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## Introduction

Microalgal **harvesting** step accounts up to **30 %** of the total **cost** of **biomass** production.

The aim of the study was to investigate the effect of an organic polymeric flocculant, **Greenfloc 120**, to flocculate microalgal species *Chlorella prothotecooides*. Effect of pH on the flocculation process under optimal flocculant level was also investigated.

## Materials and Methods



Flocculation efficiency (FE) was calculated as:

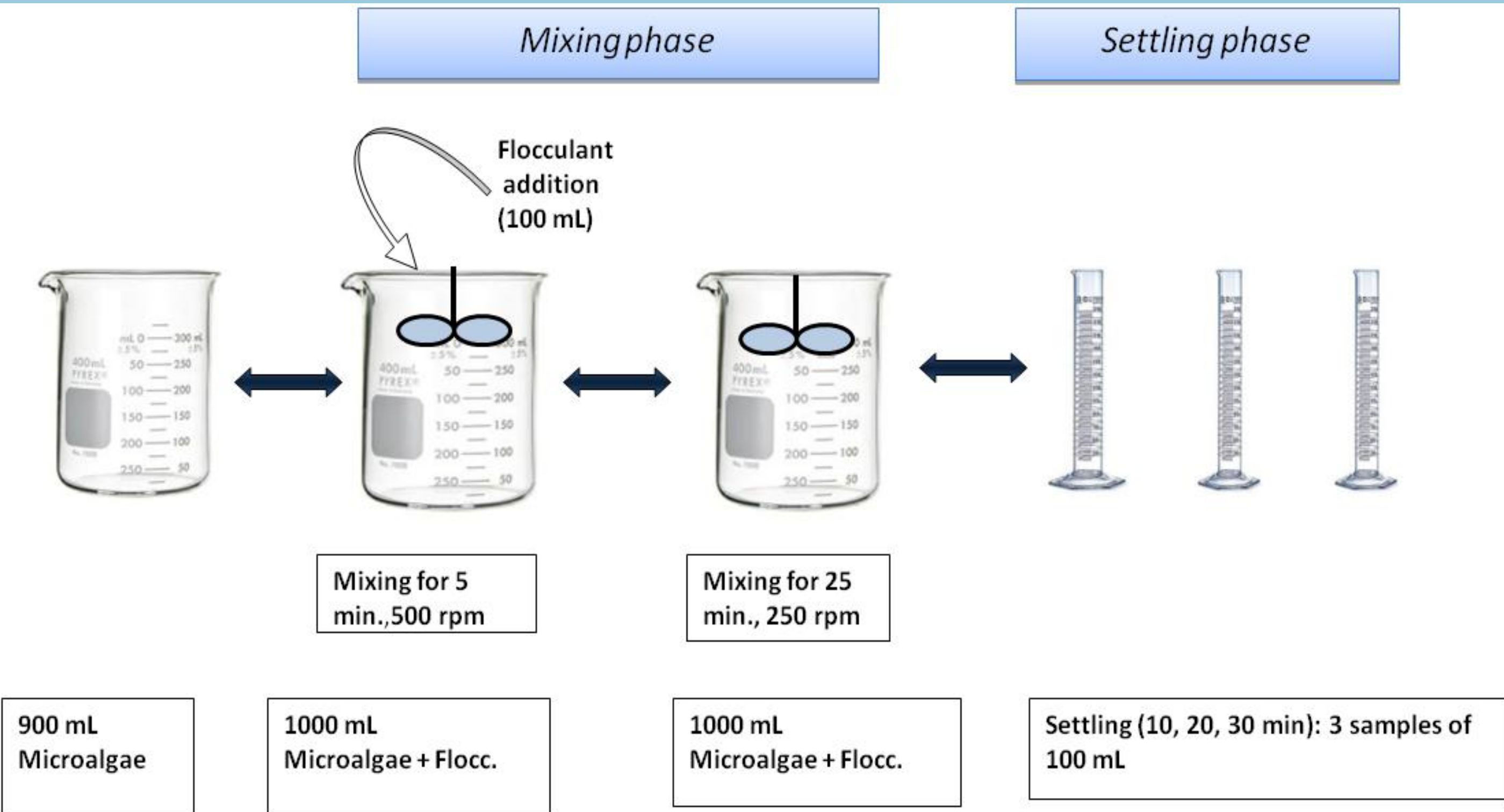
$$FE (\%) = \frac{OD_{550}(t_0) - OD_{550}(t)}{OD_{550}(t_0)} * 100$$

where:

OD<sub>550</sub> (t<sub>0</sub>): OD<sub>550</sub> before flocculant addition

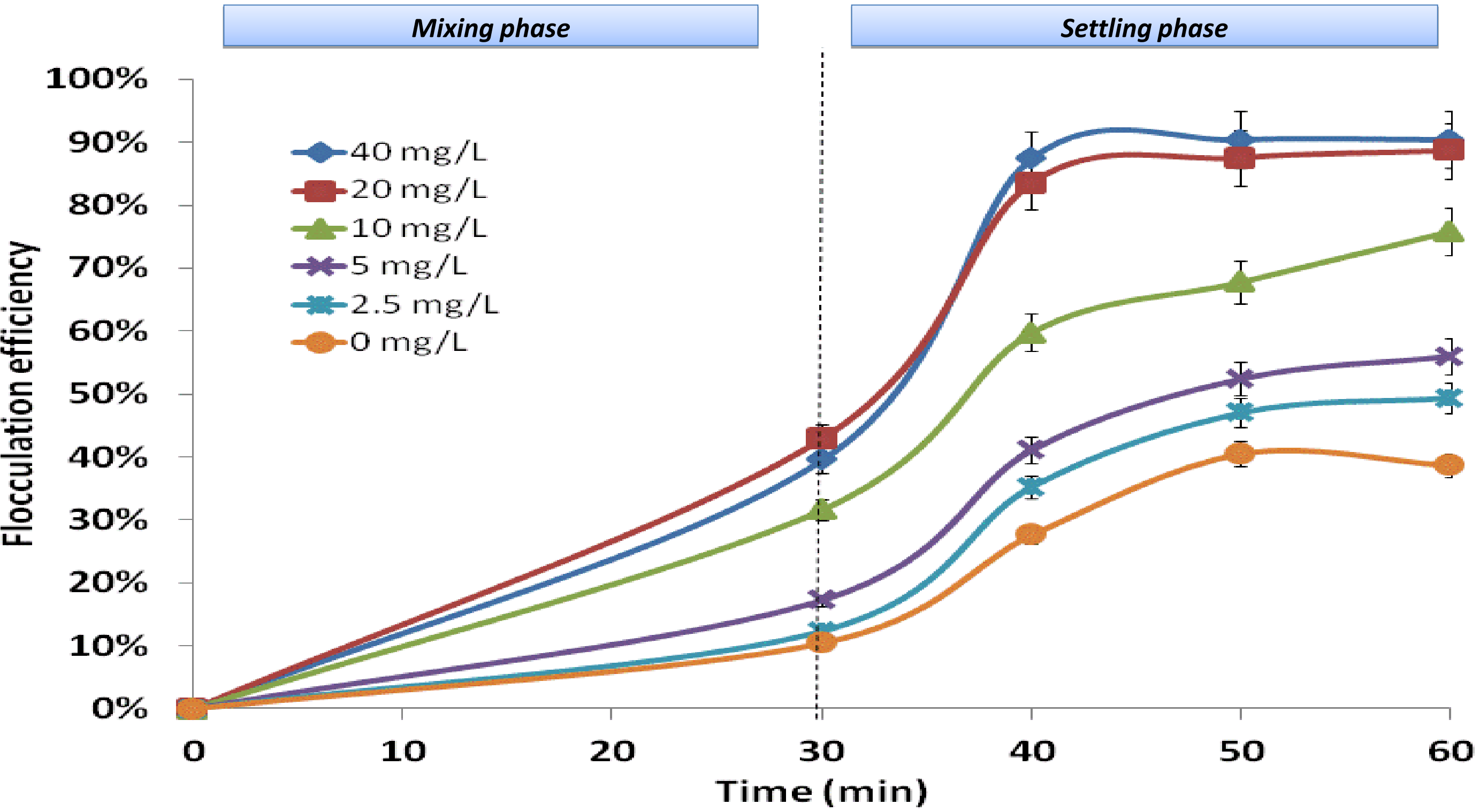
OD<sub>550</sub> (t): OD<sub>550</sub> after flocculant addition

## Experimental setup



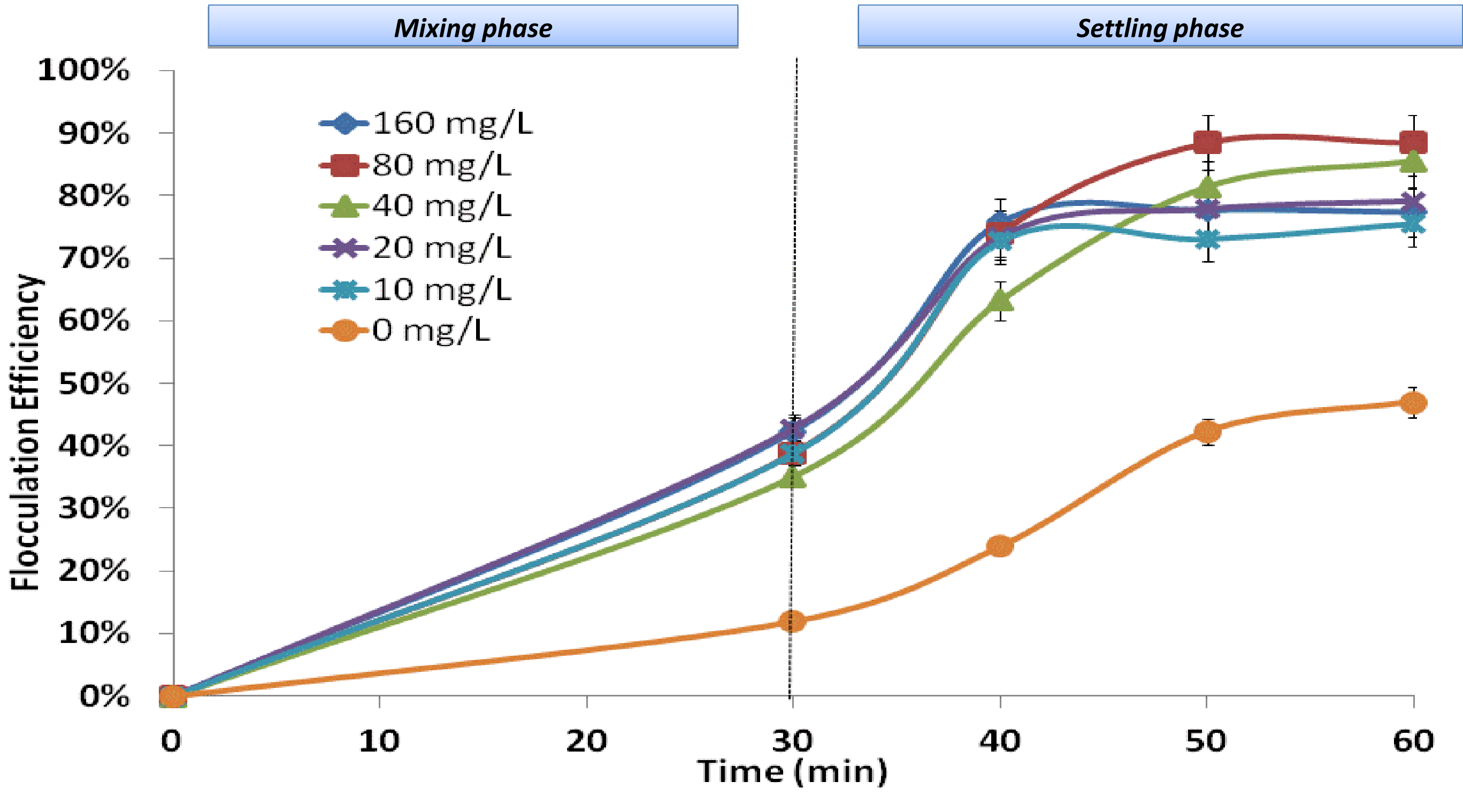
## Results

Dynamics of flocculation efficiency (FE): biomass 0.44-0.72 g/L



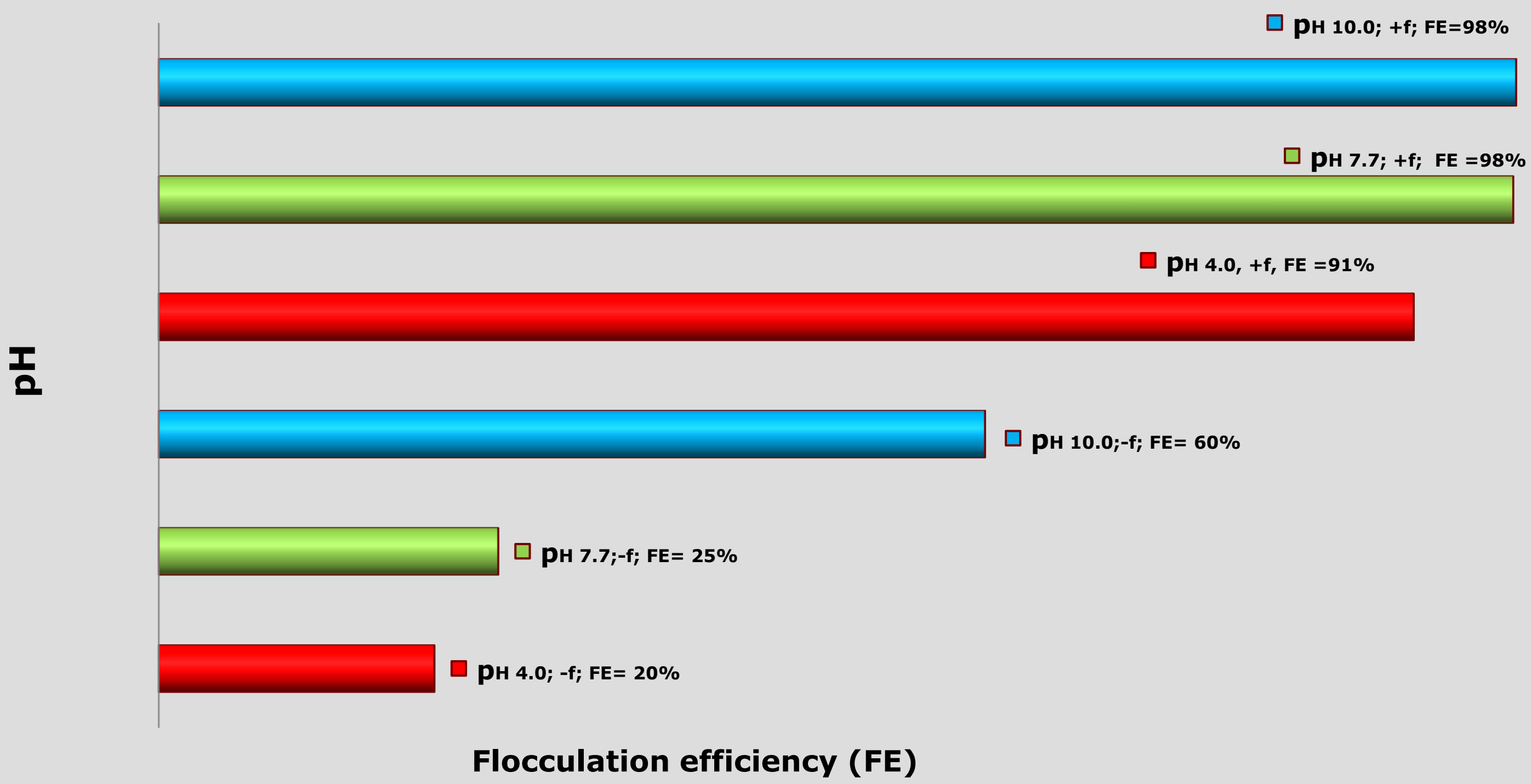
## Results

Dynamics of flocculation efficiency (FE): biomass 0.78 g/L



## Results

Effect of pH on flocculation efficiency: biomass 1.1 g/L



## Conclusions

This study demonstrated Greenfloc 120 as a promising agent for flocculation of *Chlorella prothotecooides* at neutral and high pH.

It can be concluded that:

- **40 mg flocculant/L**: optimal level (FE > 80 %) for biomass concentrations 0.44-0.72 g/L
- **80 mg flocculant/L**: optimal level (FE > 80 %) for biomass concentration 0.78 g/L

The best results were obtained at:

- **pH 10** (FE=60-73 %) in **absence of flocculant**
- **pH 7.7** and **pH 10** (FE=91-98 %) in **presence of flocculant** (40 mg /L)

## Acknowledgments

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